Impact of a recruitment campaign on students' applications to medical school

Luka Vrdoljak¹, Tanja Mijacika², Tanja Milicevic², Damir Sapunar², Livia Puljak²

¹Department of Anesthesiology University Hospital Mostar Mostar, Bosnia and Herzegovina ²Department of Anatomy Histology and Embryology University of Split, School of Medicine Split, Croatia

Corresponding author:

Livia Puljak
Department of Anatomy
Histology and Embryology
University of Split School of Medicine
Šoltanska 2

21000 Split Croatia livia@mefst.hr

Tel.: + 385 21 557 807 Fax.: + 385 21 557 811

Received: 29 March 2013 Accepted: 18 April 2013

Copyright © 2013 by Academy of Sciences and Arts of Bosnia and Herzegovina. E-mail for permission to publish: amabih@anubih.ba Objective. Medical schools might benefit if they have information about the activities that may help them to increase the number of applicants with superior academic qualifications. Methods. The study was carried out at the Split University School of Medicine, Croatia. Medical school applicants were surveyed in 2007 and 2009. Promotional activities consisted of presentations on medical education covering six general high-schools in 2008, and a presentation on regional television, aired in 2008 and 2009 shortly before the admission term. Results. The survey response rate was 79% (299/379). The number of applicants in 2009 increased by 37% and the percentage of applicants from general high schools increased by 10%, in relation to 2007. The percentage of students with the best grades in all four years of high school was 42% in the both surveys. Presumed quality was a major influencing factor for choosing Split University Medical School. However, the medical school in the Croatian capital remained the first choice for students. Only a few applicants stated that the medical schools' promotional campaigns influenced their decision about where to study; 9.7% and 1.5%, respectively. Conclusion. Presentations in elected general high schools and a television campaign should be further explored as possible activities that regional schools may use to recruit potential applicants.

Key words: Medical school applicants, Recruitment, Television campaign, Medical education.

Introduction

A number of studies have been carried out to identify proper strategies to recruit high quality applicants to medical studies. Campaigns were undertaken due the low interest of students for certain medical disciplines (1), the shortage of professionals in unattractive geographic regions (2), or to recruit

underrepresented racial and ethnic minorities (3).

The outreach and recruitment strategies used by medical schools were diverse, ranging from a nationwide campaign, to the specific activities of particular medical schools. Depending on the educational system of a country, potential applicants were targeted among high school students or among col-

lege students. One example of an intensive recruitment program is the Joint Admission Medical Program (JAMP) in Texas, USA, which is aimed at recruitment of economically disadvantaged students. The program was based on a partnership between the public and private colleges and the medical schools. The JAMP program provides a number of entering class positions in medical schools for qualified JAMP participants, and provides a variety of support measures during undergraduate study, such as additional learning activities, review of students' academic progress, counseling, mentoring and tutoring, summer internships and limited scholarship support. Various types of support at medical school were also provided (4).

To enhance the diversity of applicants, in 2009 the University of Oklahoma College of Medicine introduced a Summer Medical Program for high school students, with instructions on proper applications to medical school, providing interaction with minority physicians and distinguished physicians suitable to serve as role models in the medical profession, and senior students (5). At the University of Chicago, Pritzker School of Medicine, the curriculum was changed to suit the goals emphasized in a recruitment strategy.

By introducing a compulsory course on health disparities in 2005, the school acquired the reputation of being an institution aware of health disparities and social justice issues, which in due course has contributed to a substantial increase in the enrollment of underrepresented minority students (6).

Recruitment and promotional activities for prospective medical students, aimed at enlistment of a sufficient number of candidates for medical studies in rural areas, have been reported in Canada and Australia. Medical students in Canada, whose medical education curriculum integrates courses on rural medicine and hands-on learning,

is aimed at developing a full understanding of the people living in rural areas and the specifics of their health needs. Such courses have caused more students to select rural practice as their career choice (7). The Rural Student Recruitment Program of The University of Western Australia includes promotional visits to rural high schools. Traveling and accommodation costs during the application and interviews are supported, too (8). In Australia, the percentage of medical students from rural regions has more than doubled as a result of national policies and initiatives (7). Another Australian study proved that the revision of selection criteria can significantly influence gender balance and student ethnicity (9).

However, there is a sparsity of studies on recruitment activities aimed at enlargement of the applicant pool at medical schools. In Croatia there are four medical schools, all of which are state-owned and located in the four major cities. The intention of the authorities is to ensure that the best students from regional medical schools stay in the regional cities instead of applying for the medical school in the capital, Zagreb.

The aim of this study was to analyze whether promotional activity could recruit more high quality applicants to apply to regional medical schools. We hypothesized that presentations to high school students and the use of a TV campaign could increase the overall number of applicants and the number of applicants with higher academic qualifications.

Methods

Setting

The University of Split, School of Medicine is located in Split, the second largest city in Croatia, being one of four medical schools in Croatia. The other three schools are in Zagreb – the capital of the Republic of Croatia,

Rijeka – the third largest city and in Osijek – the fourth largest city in Croatia. The Split School annually enrolls 75 students for a 6-year medical curriculum (10).

Participants

In 2007 and 2009, one academic year before and after the television media campaign, we surveyed the applications for medical studies collected in the Students' Affairs Office. All students who personally submitted their application documents to the Students' Office were invited to participate in the study, and none of them declined. Students whose applications were submitted by another person, or who sent application by mail were not included in the study.

Promotional activities

The University of Split, School of Medicine conducted a one-year promotional campaign consisting of presentations at targeted high schools and a campaign on regional television in 2008 and 2009. TV presentations were organized as four one-hour series, specially devised to present the Split Medical School and the study of medicine. In Croatia, students enter university after a 3-year or 4-year high school course, which may be vocational or a general high school. Vocational high schools last 3 or 4 years and emphasize the acquisition of specialized skills in chosen professions, such as hair dresser or plumber. In contrast, 4-year general high schools have a broad general curriculum. Some of these schools have a curriculum which emphasizes courses in languages or mathematics. The aim of the general high schools is to provide the students with a broad background knowledge, to allow them to enroll in any of the existing university courses. General high schools admit only students with outstanding academic achievements in primary school. Therefore, our promotional activity was targeted at general high school students in Split, Croatia, and covered 6 general highschools that were visited once. At the end of each of the presentations, at least half an hour of discussion followed.

The presentations were given by the Dean and Vice-Dean for Education on three consecutive Saturdays at the beginning of the 2008-2009 school year, with fourth-year students attending. Each presentation was devoted to students from humanist, mathematical and language-oriented general high schools. The presentations lasted 45 minutes and each was attended by 40-50 students, which represents 25% of all students attending those schools. The Dean and Vice-Dean for Education gave presentations about the history of the School, the number of students, the organization of classes, the application procedure, the curriculum, research activities, opportunities for students to engage in research, employment opportunities for graduate physicians, different career opportunities, advantages of studying in Split and the Bologna Process. After the presentation, students had the opportunity to ask questions. At the end of the presentation, the Head of the Students' Affairs Office at the University of Split, School of Medicine was available to answer questions about formal admissions procedures.

The television campaign consisted of four 1-hour television programs, which were professionally filmed in a regional television studio, TV Jadran. In these television programs the School management and students promoted the School and pointed out to the benefits of studying in Split. The topics were, as follows: the role of the Medical School in the concept of a knowledge-based society, the achievements of the University of Split, School of Medicine (success stories about the development of the School) and medicine as a career choice. The presentations were shown on TV in April and September 2008 and in April and June 2009. The first presentation was in the evening, at 8 PM on TV

Jadran, and during the next week the presentations were replayed three times during the afternoons. TV Jadran is essentially available free of charge to the population of Central Dalmatia, but TV Jadran participates in a Croatian television cable network too and its program is available nation-wide.

The admissions to the University of Split, School of Medicine took place at the end of the June 2009, and all activities were completed by that date.

Survey

The survey was conducting using a questionnaire, which consists of 6 questions: about the applicants' city of residence, gender, high school, high school grade average, the reasons which influenced the student to choose this medical school and a request to rate the four Croatian medical schools in regard to the students' study preferences (Supplement 1). For the question about the reasons for choosing a medical school, multiple answers were allowed.

Ethics statement

The study was approved by the University of Split, School of Medicine Ethics Committee. As this study involved anonymous data collection, informed consent was not required.

Statistical analysis

Each completed questionnaire was marked by numeric code. The collected data were entered into electronic data sheets, and analysis was performed using GraphPad Prism 4.00 software (GraphPad Software Inc., La Jolla, CA, USA). Frequencies were reported as numbers and percentages. The differences in response frequencies between the two years were calculated using Fisher's exact test. Categorical variables were compared using the chi-squared test. Statistical significance was set at p<0.05.

Results

Out of total of 379 applicants in 2007 and 2009, 299 (79%) submitted their application personally (103 in 2007 and 196 in 2009) and were eligible to participate in the study. All of them agreed to participate and to fill out the questionnaire. More women applied in both analyzed years in comparison to men. In both years the majority of the applicants were from general high schools (Table 1).

The number of applicants to the University of Split, School of Medicine increased, from 147 in 2007 to 232 in 2009. Among applicants who participated in the study, the number of applicants from general high schools, where a promotional campaign was carried out, increased by 10%. In 2007, 42.7% (44/103) of participants were students with the best grades during all four years of high school, compared to 41.8% (82/196) in 2009.

However, the average high school grade of applicants was lower in 2009, compared to 2007. The percentage of applicants from the Split-Dalmatian County, where the School is located, remained almost the same, while the percentage of applicants from the neighboring counties – Dubrovnik-Neretva County, Zadar County and Sibenik County – showed an increase in 2009 (Table 1). The majority of the applicants were from three counties in Croatia: the Split-Dalmatia County, the Dubrovnik-Neretva County and Zadar County, and from the neighboring country, Bosnia and Herzegovina (Table 1).

In both years, the applicants' first choice was the medical school in Zagreb, and second choice was the school in Split. For the majority of the applicants, the most important selection factor was the medical school's quality. There were 10 applicants in 2009 and 3 applicants in 2007 who stated that the school's promotional campaign was an important factor in their decision about where to study (Table 1). The percentage

of applicants who deemed the promotional campaign of the medical school important when deciding where to study was significantly higher in 2007, than in 2009 (9.7% vs. 1.5%, respectively). Separate analyses were conducted for the subgroup of students

from Split, and the only categorical variable among the reasons for choosing a medical school that was significantly different between the analyzed years was the number of students who indicated the promotional campaign as a reason (Table 1).

Table 1 Comparison of medical school applicants' responses in 2007 and 2009. The number of respondents in 2007 was 103, and in 2009 it was 196

Applicants' responses	2007	2009
Gender		
M	42 (40.8)	59 (30.1)
F	61 (59.2)	133 (67.8)
Missing values	0	4 (2%)
High school		
General high school	65 (63.1)	142 (72.4)
Vocational school	35 (33.9)	47 (21.4)
Other	0	3 (1.5)
Missing values	3 (2.9)	4 (2)
Best grade in all four years of high school, N (%)	44 (42.7)	82 (41.8)
Reasons for choosing a medical school among all applicants included in the study, N (%)*		
Quality of the studies	84 (81.6)	159 (81.1)
Reputation of a specific medical school	33 (32.0)	64 (33.0)
Cost of studying	28 (28.0)	33 (17.0) †
Friends' recommendations	8 (8.0)	22 (11.2) †
Quality of the student life	15 (15.0)	18 (9.1)
Promotional campaign of the medical school	10 (9.7)	3 (1.5) †
Reasons for choosing a medical school among applicants from Split, N (%)*		
Quality of the studies	58 (79.4)	99 (81.1)
Reputation of a specific medical school	25 (34.2)	40 (32.8)
Cost of studying	23 (31.5)	27 (22.1)
Friends' recommendations	5 (6.8)	16 (13.1)
Quality of the student life	11 (15.1)	11 (9.0)
Promotional campaign of the medical school	7 (9.6)	3 (2.5) †
First choice medical school		
Osijek	1 (0.9)	1 (0.5)
Rijeka	2 (1.9)	0
Split	15 (14.6)	15 (7.6)
Zagreb	74 (71.8)	168 (85.7) †
Missing values	11 (10.7)	12 (6.1)
County of residence		
Split-Dalmatian County	81 (78.4)	149 (76.0)
Dubrovnik-Neretva County	4 (3.8)	10 (5.1)
Zadar County	3 (2.9)	6 (3.0)
Sibenik-Knin County	1 (0.9)	6 (3.0)
Brod-Posavina County	1 (0.9)	-
Vukovar-Syrmia County	1 (0.9)	1 (0.5)
Krapina-Zagora County	0	1 (0.5)
Bosnia and Herzegovina ‡	10 (9.7)	16 (8.1)

^{*}Multiple responses allowed; \dagger Significant difference between the observed years; P < 0.05; \dagger All applicants from neighboring country Bosnia and Herzegovina were entered as one category.

Discussion

In this study we analyzed whether one-year promotional activities, consisting of presentations in elected high schools and a campaign on a regional television may have an effect on the applicant pool of a regional medical school. Compared to the year before the promotional activity, the number of applicants after the promotional activity increased by 37%. The number of applicants to this School has been fluctuating between 100 and 200 over the past decade (11), and the year after our promotional activity was the first time since 1999 that there were more than 200 applicants. The number of applicants from general high schools increased by 10% in the observed period, which may be considered a positive trend, because high schools provide a broader knowledge base in comparison to vocational schools.

However, only 9.7% of students in 2007 and 1.5% of students in 2009 stated that the promotional campaign of the medical school was their principal reason for choosing Split medical school. It is possible that the campaign had an influence, but students do not perceive presentations in high schools and television series as a 'promotional campaign', because they were not designated in that way.

Our data suggest that further research will be needed to improve the recruitment strategy, in order to recruit more high quality applicants and to retain the majority of prospective students in the region. Strategies that will create the image of a high quality school could influence prospective students to choose a regional school as their first choice, because the students stated that the quality of the medical school was the most important factor in choosing schools. Our promotional activity did not affect gender ratio. The predominance of women applicants has been present since the founding of the School of Medicine in Split (12).

The medical school in Split is among the smallest medical schools in Croatia in terms of the number of available positions, and our previous study indicated that other schools have a larger applicant pool, corresponding to the number of enrolment positions available (11). Considering the overall number of high school students interested in becoming medical students, there is potential for increasing the applicant pool of regional medical students.

In a 2005 study, Agrawal et al. studied recruitment methods used by American medical schools to recruit underrepresented and minority (URM) students, where the deans of student affairs were asked to indicate which interventions they used, and to rate the effectiveness of those programs (3). The interventions that were listed and rated were: site visits to school pre-admission, preadmission counseling, career development outreach in primary or secondary schools, financial aid, early targeting of minority students, URM student recruiters, enrichment programs, community based education programs, alumni involvement, application assistance and partnerships with various organizations, such as education or labor state departments and foundations (3). Regional schools could consider using the extensive list of promotional activities, based on studies reporting on outreach to minority students, to increase their attractiveness among future medical students.

Hemphill et al. wrote about a marketing approach to recruitment, emphasizing that marketing theory deals with perceptions of value, satisfaction and practice selection, and that new perspectives in research-based market segment-specific solutions can be sought (13). Building on the suggestions of Hemphill et al. (13), high school students may be viewed as customers, medical schools as corporations and the entire country as the market of competition. Adopting this philosophy, coordinating mechanisms to integrate dissemination of information, and marketing the service supply between

the three elements may help in student recruitment to a specific school.

The University of Split, School of Medicine should emphasize its strengths to potential students, and advertise its advantages to potential candidates. For example, this school has a very high focus on evidencebased medicine and it is home to the national branch of The Cochrane Collaboration (14-18). We have reported previously that students from the University of Split, School of Medicine have more knowledge and more positive attitudes on evidence-based medicine, compared to students from other medical schools in Croatia and in Mostar, Bosnia and Herzegovina (19). Acta Medica Academica published a series of manuscripts in 2012, showing that the University of Split, School of Medicine is continuously improving its curriculum (20), placing the emphasis on clinical skills (21), and providing students with enhanced experience in the field of family medicine (22-25). All this could be an advantage for prospective students.

This study had several limitations. Only applicants from Split would have been potentially exposed to the promotional activities in the high schools and the survey did not question whether the survey respondents had heard the school presentation or seen the television broadcast. Since few students indicated that the promotional activities of the School were important in their decision, it is possible that there were other confounding variables that influenced the 37% increase in the number of applicants post-promotion. In the study we did not have a comparison group to show the differences between a medical school with a promotional activity and one without any. We did not have any means for measuring the viewership of the television series. Furthermore, in 2007, there were 70% of applicants who participated in the survey, and 84% in 2009. The proportion of applicants from general and vocational schools among those who did not fill out the survey does not necessarily need to be the same as among those who did participate in the study in 2007 and 2009. The 10% difference in the number of applicants from general high schools between 2007 and 2009 might be due to the fact that more students from general high schools came in person to submit their applications in 2009.

Conclusion

The number of applicants increased by 37% after the promotional activities, but the students did not indicate that the promotional campaign was a reason for choosing a medical school. Presentations in targeted general high schools and a television media campaign should be further studied, as possible activities that regional schools may use to reach out to potential applicants.

Acknowledgements: We are grateful to the study participants. We appreciate the help provided by Mr. Josip Baric from the Students' Affairs Office at the School of Medicine in Split, for providing valuable information and assistance in distribution of questionnaires.

Authors' contributions: Conception and design: DS, LP; Acquisition, analysis and interpretation of data: LK, TM, TM, DS, LP; Drafting the article: LP; Revising it critically for important intellectual content: LK, TM, TM, DS, LP; Approving final version of the manuscript: LK, TM, TM, DS, LP.

Conflict of interest: The authors declare that they have no conflict of interest.

References

- Bly J. What is medicine? Recruiting high-school students into family medicine. Can Fam Physician. 2006;52:329-34.
- 2 Jutzi L, Vogt K, Drever E, Nisker J. Recruiting medical students to rural practice: perspectives of medical students and rural recruiters. Can Fam Physician. 2009;55:72-3. e1-4.
- 3 Agrawal JR, Vlaicu S, Carrasquillo O. Progress and pitfalls in underrepresented minority recruitment: perspectives from the medical schools. J Natl Med Assoc. 2005;97:1226-31.

- 4 Dalley B, Podawiltz A, Castro R, Fallon K, Kott M, Rabek J, et al. The Joint Admission Medical Program: a statewide approach to expanding medical education and career opportunities for disadvantaged students. Acad Med. 2009;84:1373-82.
- 5 Larson J, Atkins RM, Tucker P, Monson A, Corpening B, Baker S. The University of Oklahoma College of Medicine summer medical program for high school students. J Okla State Med Assoc. 2011;104:255-9.
- 6 Vela MB, Kim KE, Tang H, Chin MH. Improving underrepresented minority medical student recruitment with health disparities curriculum. J Gen Intern Med. 2010;25(Suppl 2):S82-5.
- 7 Rourke J. How can medical schools contribute to the education, recruitment and retention of rural physicians in their region? Bull World Health Organ. 2010;88:395-6.
- 8 Emery A, Hurley S, Williams J, Pougnault S, Mercer A, Tennant M. A seven-year retrospective analysis of students entering medicine via a Rural Student Recruitment program in Western Australia. Aust J Rural Health. 2009;17:316-20.
- 9 Puddey IB, Mercer A, Carr SE, Louden W. Potential influence of selection criteria on the demographic composition of students in an Australian medical school. BMC Med Educ. 2011;11:97.
- 10 Maslov Kruzicevic S, Barisic KJ, Banozic A, Esteban CD, Sapunar D, Puljak L. Predictors of attrition and academic success of medical students: a 30-year retrospective study. PLoS One. 2012;7:e39144.
- 11 Puljak L, Brnjas Kraljevic J, Barac Latas V, Sapunar D. Demographics and motives of medical school applicants in Croatia. Med Teach. 2007;29:e227-34.
- 12 Puljak L, Kojundzic SL, Sapunar D. Gender and academic medicine: a good pipeline of women graduates is not advancing. Teach Learn Med. 2008;20:273-8.
- 13 Hemphill E, Dunn S, Barich H, Infante R. Recruitment and retention of rural general practitioners: a marketing approach reveals new possibilities. Aust J Rural Health. 2007;15:360-7.
- 14 Novak K, Miric D, Jurin A, Vukojevic K, Aljinovic J, Caric A, et al. Awareness and use of evidence-

- based medicine databases and Cochrane Library among physicians in Croatia. Croat Med J. 2010;51:157-64.
- 15 Puljak L, Rako D. Enhancing medical practice in Croatia through The Cochrane Collaboration. Biochemia Medica. 2009;19:260-5.
- 16 Sambunjak D, Puljak L. Cochrane systematic review as a PhD thesis: an alternative with numerous advantages. Biochemia Medica. 2010;20:319-26
- 17 Puljak L, Rako D. Branch of the Cochrane Collaboration founded in Croatia. Acta Med Acad. 2009;38:51-4.
- 18 Vrdoljak D. Teaching evidence based medicine in family medicine. Acta Med Acad. 2012;41:88-92.
- 19 Balajic K, Barac-Latas V, Drenjancevic I, Ostojic M, Fabijanic D, Puljak L. Influence of a vertical subject on research in biomedicine and activities of The Cochrane Collaboration branch on medical students' knowledge and attitudes toward evidencebased medicine. Croat Med J. 2012;53:367-73.
- 20 Grkovic I, Sapunar D, Marusic M. Ways to address the challenges of a modern medical curriculum: living academic medicine at the University of Split, School of Medicine. Acta Med Acad. 2012;41:7-17.
- 21 Zakarija-Grkovic I, Simunovic V. Introduction and preparation of an objective structured clinical examination in family medicine for undergraduate students at the University of Split. Acta Med Acad. 2012;41:68-74.
- 22 Jercic M, Cizmic Z, Vujevic M, Puljiz T. Practical training in family medicine in the Dalmatian hinterland: first-hand experience of four physicians. Acta Med Acad. 2012;41:93-9.
- 23 Mrduljas-Djujic N, Pavlicevic I, Marusic A, Marusic M. Students letters to patients as a part of education in family medicine. Acta Med Acad. 2012;41:52-8.
- 24 Pavlicevic I. The new curriculum for family medicine at the University of Split, School of Medicine. Acta Med Acad. 2012;41:26-37.
- 25 Pavlicevic I, Svab I. Family medicine defines its academic niche: the Split Initiative. Acta Med Acad. 2012;41:1-3.

Supplement 1

QUESTIONNAIRE FOR MEDICAL SCHOOL APPLICANTS

Please indicate the city in which you live:								
2. Gender		O male						
		O female						
3. Your high school was:		O general high school						
		O vocational high school in the field of medicine						
O other vocationa			ther vocational h	high school				
4. Your average academic success in high school:		Excellent (grade 5)		Very good	Very good (grade 4)		Other	
1st grade		0		0	0		0	
2 nd grade		0		0	0		0	
3 rd grade		0		0	0		0	
I th grade		0		0	0		0	
5. What were your reasons for choosing a particular medical school among all Croatian schools? (multiple answers allowed)	O Quality of the stu		udies	O Friends' recommendations			ns	
	O Reputation of a school		pecific medical O Quality of the studer		nt life			
	O Cost of studying)	O Promotional campaign of the medica school			f the medical	
6. If you could choose a city where you would ideally like to study, what would be the order of your preference?		y	1 st choice	2 nd choice	3 rd choice	e	4 th choice	
Osijek			0	0	0		0	
Rijeka			0	0	0	0		
Split			0	0	0	0		
Zagreb			0	0	0		0	